

ACHELIA ASSIMILIS (HASWELL, 1884) IN THE
HETEROZOSTERA BED OF PUERTO ALDEA, COQUIMBO:
FIRST RECORD FROM THE NORTHERN CHILEAN
COAST (PYCNOGONIDA: AMMOTHEIDAE)

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Abstract.—This work describes individuals of *Achelia assimilis* (Haswell) collected in a bed of *Heterozostera tasmanica* (Martens ex Aschers.) den Hartog from Puerto Aldea (Coquimbo, Chile), extending its geographical range from Chiloé north to Coquimbo. Latitudinal variations in size and *A. assimilis* body proportions are suggested. The distribution and dispersal of *A. assimilis* along the southeast Pacific is briefly discussed.

In spite of the pycnogonid species richness found in the northeast Pacific (Nakamura & Child 1983), the pycnogonid southeast Pacific fauna is scarcely known (Child 1977). In the South American Pacific, few pycnogonid collections have been gathered. Hedgpeth (1961) found the only known pycnogonids in the north of Chile. This work documents the finding of a new record for pycnogonid fauna from the northern Chilean coast and describes its morphology with the purpose of contributing to *A. assimilis* recognition.

During August, 1987, six adult (1 ♀ with eggs, 5 ♂) of *Achelia assimilis* (Haswell) were found. The pycnogonids were collected in the Puerto Aldea intertidal (30°16'S), Tongoy Bay (Fig. 1), grasping the leaves of *Heterozostera tasmanica* (Martens ex Ascheron) den Hartog. The *Heterozostera* bed in Puerto Aldea is the only seagrass site reported along the South American Pacific coast (Santelices 1982, Phillips et al. 1983).

Puerto Aldea is an area with particular conditions; shallow and protected from wave action, and to the prevalent Southwest Wind of the Coquimbo region (Alarcón 1975). *Heterozostera tasmanica* hosts a very diverse fauna, especially juvenile stages of species with commercial and ecologic importance.

Achelia assimilis (Haswell)

Fig. 2

Ammothea assimilis Haswell, 1884:1026–1027; pl. 55, figs. 5–9.

Achelia assimilis Flynn, 1919:87–89; pl. 22, figs. 22–26.

Achelia (Ignavogriphus) assimilis Fry & Hedgpeth, 1969:104–106; figs. 157, 163.

Description.—Trunk circular, compact, hardly segmented excepting one neck suture, lateral processes and neck contiguous. Neck with one small spine over each palp insertion. Lateral processes with dorsodistal tubercles, one on posterior process and two on other lateral processes; each tubercle armed with one spine. Trunk with three dorsal spines. Ocular tubercle short, conical, tip pointed. Proboscis long, length close to trunk length. Abdomen elongate, extending into first coxa, upward, armed with one dorsomedian spine, two dorsal and two lateral spines near tip.

Chelifores longer than second palp segment, with one dorsoproximal spine and one dorsomedian spine, with a low dorsodistal tubercle armed with two spines and one laterodistal spine. Chela reduced, slender, globe-shaped, with small spine.

Palp 8-segmented. First segment with one dorsal and lateral tubercle. Segment 2 lon-

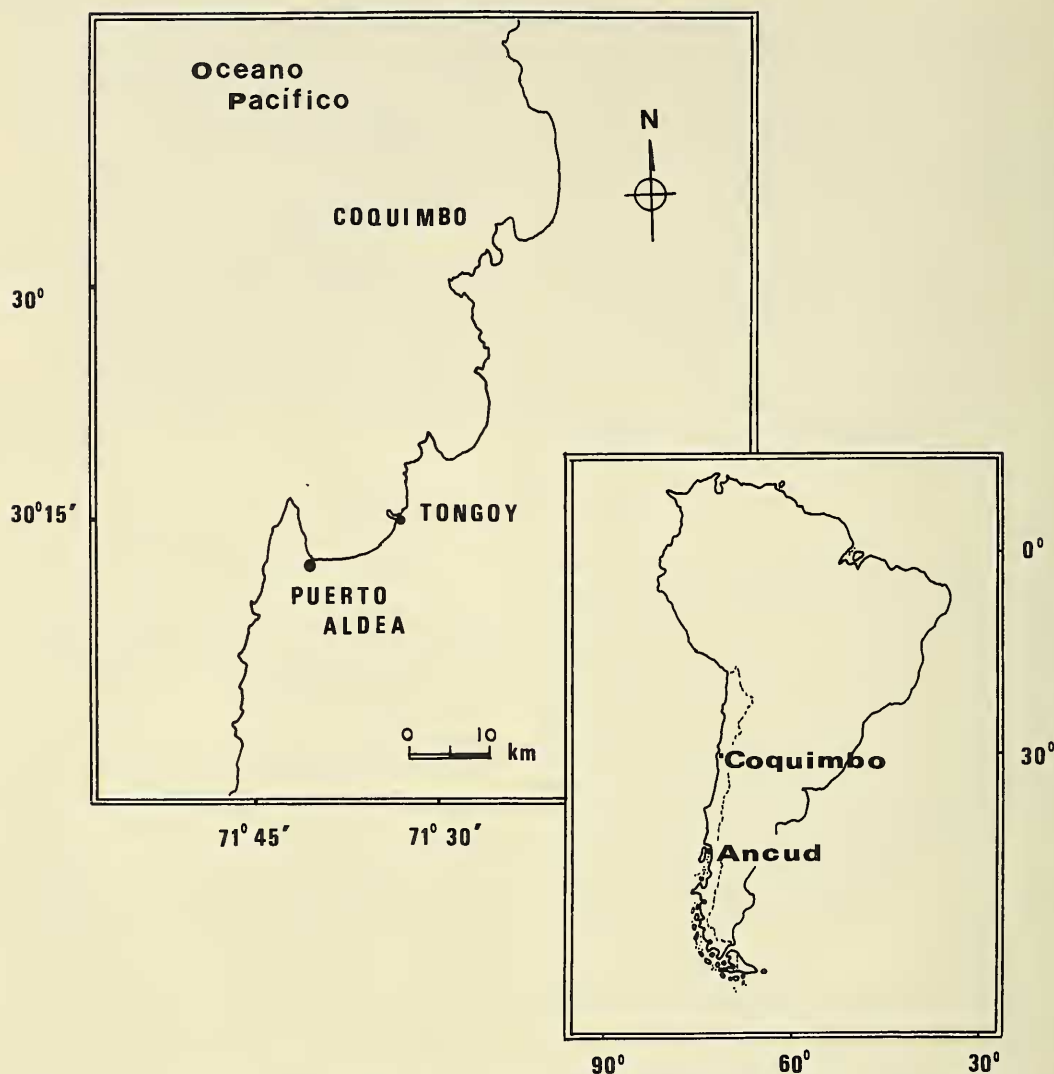


Fig. 1. Map of South America indicating the Chilean distributional limits of *Achelia assimilis* (Haswell) (bottom). Coquimbo coastal zone showing location of the collecting site on the *Heterozostera* bed in Puerto Aldea, Bahía Tongoy (top).

gest, equipped with two dorsodistal spines. Third segment broad, with one dorsal spine. Fourth segment shorter than second segment, equipped with two ventrodistal spines. Sixth and seventh segments widened ventro-distally forming a low process. Last segment with a rounded tip. Four terminal segments with several ventral setae.

Oviger 10-segmented. First and second

segments without spines; third segment with one dorsal spine; fourth and fifth segments subequal, with lateral row of five to six setae; fifth segment with two dorsodistal spines; sixth segment with one ventrodistal spine, one dorsal spine and two lateral spines; seventh segment with five spines around dorsal border and two lateral small spines, and two ventral denticulate spines;

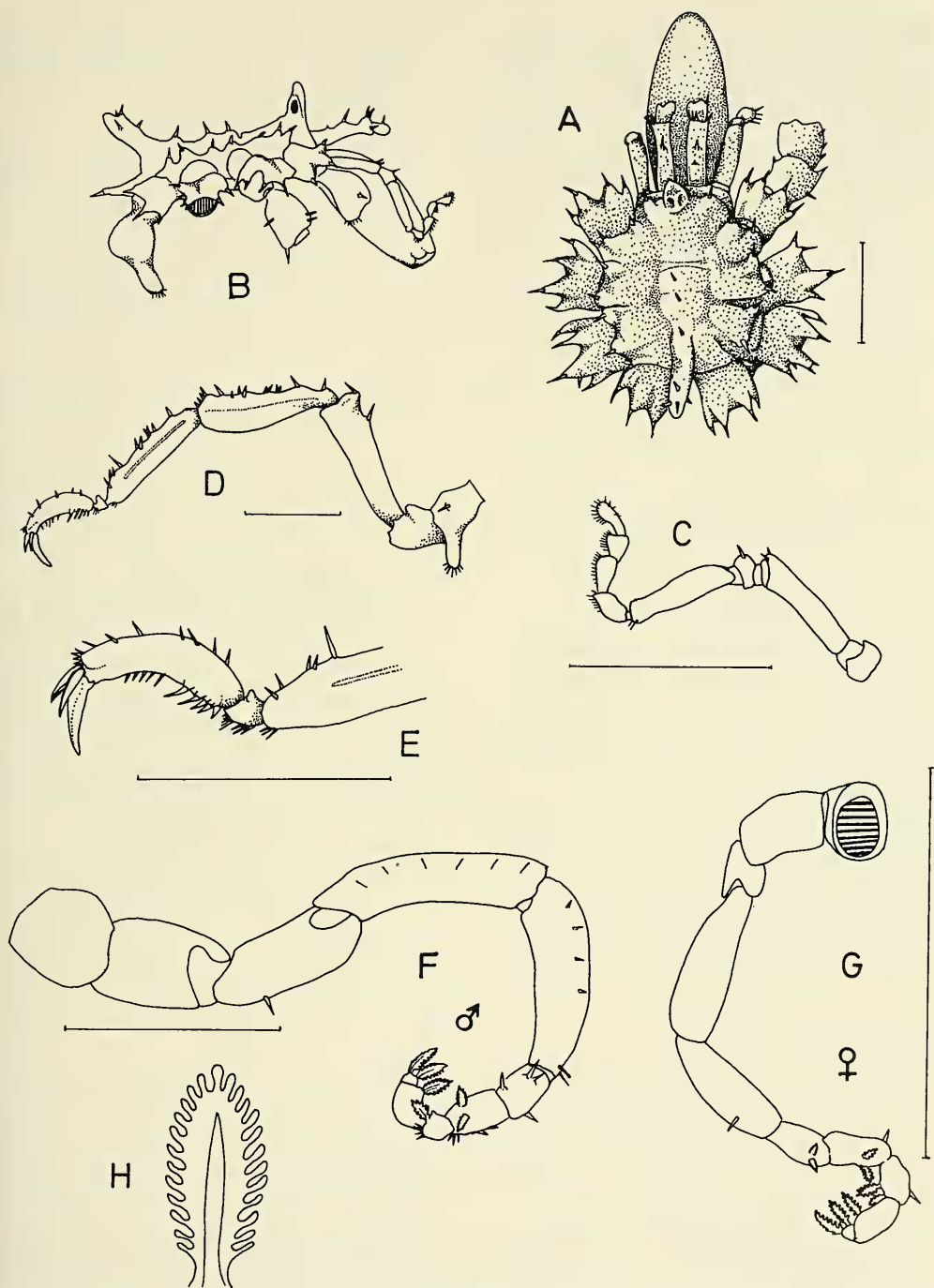


Fig. 2. *Achelia assimilis*. A, Body (dorsal); B, Body (lateral); C, Palp; D, Third leg; E, Terminal segments of third leg; F, Male oviger; G, Female oviger; H, Denticulate spine. (Bar = 1 mm, excepting drawing F = 0.5 mm.)

eighth segment broad, with four dorsodistal spines and one ventral denticulate spine; ninth with one denticulate spine, and tenth with two terminal denticulate spines. Denticulate spines with 12 serrations per edge. Terminal segment disposed synaxially. Female oviger smaller than male, fourth segment longest, five terminal segments each equipped with two denticulate spines.

Legs long; coxa 1 with four distal tubercles, each bearing a single spine except third tubercle armed with one to three spines; coxa 2 with ventrodistal genital process, as long as width of segment, equipped with several setae; coxa 3 with one dorsal tubercle and two lateral tubercles, bearing single short spine. Femur slightly shorter than tibia 1, broad distally, with two low dorsodistal tubercles, each bearing one spine; tibia 1 inflated medially but reduced distally, with five or six low tubercles in two dorsal rows, with single spines, with one distal and proximal long spine, and a lateral suture. Tarsus with small dorsal tubercle without spine, three delicate ventral spines and several distal setae. Propodus longer than tibia, curved, without heel, with five large basal spines and five pairs of small sole spines, seven or eight dorsal spines and several distal setae. Claw long, over two-thirds of propodal length. Auxiliary claws about half length of terminal claw. Female coxa 1 with two distal tubercles and without genital process in coxa 2.

Measurements (δ , in mm):

Trunk length (neck to tip 4th lateral process)	1.77
Trunk width (across 2nd lateral processes)	1.89
Proboscis length (ventral)	1.55
Abdomen length	0.66
Ocular tubercle height	0.43
Chelifore length	0.80
Third leg:	
Coxa 1	0.34
Coxa 2	0.57

Coxa 3	0.40
Femur	1.46
Tibia 1	1.49
Tibia 2	1.34
Tarsus	0.14
Propodus	0.66
Claw	0.40
Auxiliary claws	0.23

Remarks on identification.—The specimens collected in Puerto Aldea, differ from Stock's (1953, large form) individuals by having a body nearly circular; more compact and lateral processes juxtaposed; femur without dorsomedial spines; 4th and 5th oviger segments similar. The present pycnogonid agrees in all essentials with Hedgpeth's (1961) description from southern Chile. But, the latter bears only three or four basal spines on the propodus.

The size of the *A. assimilis* male found in Puerto Aldea is the greatest among literature reports. An interesting latitudinal sequence is observed in *Achelia assimilis* size and in the several terminal segments of characteristic locomotor appendages (Table 1). Although the evidence is limited, Table 1 suggests an inverse relation between trunk size, claw size, number of propodal spines, and latitude. To verify the effect of a latitudinal-dependence factor (e.g., temperature) on *Achelia assimilis* growth and development, it would be essential to have a more complete sampling program along the latitudinal gradient.

Remarks on distribution and dispersal.—*Achelia assimilis* has been previously found in the south and west Australian coasts (Stock 1973, Child 1975), New Zealand and Auckland Islands (Stock 1954), New Caledonia (Child 1977) and in the South American coast (Hedgpeth 1961, Fry & Hedgpeth 1969). The present work extends the actual *A. assimilis* distribution from Ancud, Chiloé (41°44'S) to Puerto Aldea, Bahía Tongoy (30°16'S) in the Chilean northern coast (Fig. 1).

Table 1.—Body measurements (mm) and proportions of third leg of male *Achelia assimilis* (Haswell) from different latitudes.

Characters	Locality and latitude		
	Auckland Island (50°S)	Chile south (40°S)	Chile north (30°S)
Trunk length	1.09	1.44	1.77
Trunk width	1.00	1.33	1.89
Abdomen length	0.38	0.65	0.66
Locomotor appendage total length	4.16	3.64	6.40
Propodus/Claw	1/3–1/2	1/2	2/3
Claw/Auxiliary claw	2/3	2/3–1/2	1/2
Number of propodal spines	3	3–4	5
Source:	Stock (1954)	Hedgpeth (1961)	Present work

Pycnogonids can disperse into new areas clinging to drifting plants, by marine currents (Fage 1949) or, parasitizing ambulatory organisms (Fry & Hedgpeth 1969). The specific food associations and sedentary habits of *Achelia* (Bamber & Davis 1982) generate a reduced dispersal power over great distances. In general, disjointed distribution of *A. assimilis* could be explained through the same hypotheses which explain the presence of *Heterozostera tasmanica* in Chile: a) a transoceanic dispersal from South Pacific to central-northern Chile, via West Wind Drift and Humboldt current; or b) a South American-Antarctic-Australian continuous distribution in the Gondwanian paleocontinent (Edgar 1986). On the other hand, an antropic introduction cannot be discarded (Carlton 1987).

The *Achelia assimilis* and other species distribution—e.g., *Xenosiphon mundanum* (Selenka, de Man & Büllow) (Sipunculida; Tarifeño & Tomicic 1973), *Pyura preapucialis* Heller (Chordata; Paine 1986), as with several marine algae listed by Santelices (1980)—confirms the biogeographical relationship between the South American and Australian coast. The finding of species with reduced dispersal capacity and species distributed in the Australian region, would

confirm a Gondwanian origin for this disjoint distribution.

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